

## NANOPARTICLE DELIVERY OF THERAPEUTIC FOR TREATMENT OF LUNG CANCER

### SUMMARY

The National Cancer Institute seeks parties interested in licensing or co-developing an improved treatment for non-small cell lung cancer based on inhalation of nano- and microparticle therapeutics.

### REFERENCE NUMBER

E-159-2014

### PRODUCT TYPE

- Therapeutics

### KEYWORDS

- NSCLC
- non-small cell lung cancer
- nanoparticle
- immunotherapy

### COLLABORATION OPPORTUNITY

This invention is available for licensing.

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### DESCRIPTION OF TECHNOLOGY

Non-small cell lung cancer (NSCLC) is the leading cause of cancer-related deaths in developed countries. Despite the availability of several synergistic, targeted therapy regimens, the 5-year survival rate for NSCLC is only 15%. The poor prognosis of NSCLC is due in part to limitations of current treatments, which do not trigger an immune response against NSCLC, nor can they be directly delivered into the lungs.

Researchers at NCI's [Laboratory of Experimental Immunology](#) have developed a novel method for synthesizing polyketal nanoparticles with adsorbed CpG oligonucleotides (NP-CpG) that possess immunomodulatory and potent anti-tumor activity, and can be safely delivered to the lungs. The researchers have demonstrated a link between NP-CpG accumulation in pulmonary tumors and an increase in TH1 cells and decrease in Treg cells *in vivo*. They have optimized particle size for intratracheal delivery, and *in vivo* studies showed improved efficacy, PK, and PD compared to other CpG formulations.

NCI Technology Transfer Center

<https://techtransfer.cancer.gov/pdf/e-159-2014.pdf>

The novel NP-CpG preparation can be made reproducibly and to scale for expanded *in vivo* studies.

The NCI seeks partners interested in licensing or collaborative research to co-develop this therapeutic with an initial goal of preclinical evaluation leading to clinical testing.

### POTENTIAL COMMERCIAL APPLICATIONS

- Adjuvant or synergistic therapeutic to enhance efficacy of existing treatment regimes for NSCLC

### COMPETITIVE ADVANTAGES

- Optimized particle size for intratracheal delivery
- Improved efficacy, PK, and PD compared to other CpG formulations

### INVENTOR(S)

[Dennis Klinman](#) (NCI)

### DEVELOPMENT STAGE

- Pre-clinical (in vivo)

### PUBLICATIONS

Klinman D, et al. [[PMID 18430787](#)]

### PATENT STATUS

- **U.S. Filed:** US Patent Application No. 62/024,657 filed July 15, 2014

### THERAPEUTIC AREA

- Cancer/Neoplasm